Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	**WT Docket No. 06-150**
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	**PS Docket No. 06-229**
	)	
Amendment of Part 90 of the Commission's Rules	)	**WP Docket No. 0-100**

Reply Comments to the Third Report and Order and Fourth Further Notice of Proposed Rulemaking adopted on January 25, 2011 by the Federal Communications Commission (FCC) relating to the aforementioned dockets. The comments are issued by the Adams County Communication Center, 700 MHz waiver recipient and BTOP grant recipient.

I. Introduction

The purpose of this filing is to express the comments and opinions of the Adams County Communication Center ("ADCOM 911") on the issues and considerations addressed in the Third Report and Order and Fourth Further Notice of Proposed Rulemaking ("NPRM") adopted on January 25, 2011 by the Federal Communications Commission ("FCC"). These comments are based on the experience and perspective from an agency selected to be an "early builder" that is actively engaging in the development of a 700MHz, Long Term Evolution ("LTE") Broadband network.

In an attempt to be concise, ADCOM 911 has chosen to respond to the elements of the NPRM that it feels are the most critical to the immediate future of public safety broadband development. A lack of response on a specific issue is not an endorsement of the FCC position.

For each section, the initial questions/position from the NPRM will be identified followed by the ADCOM 911 response.

II. Comments/Responses

Section IV: Paragraph 16 – *"As an initial matter, we seek comment on the definition of 'interoperability' for purposes of the public safety broadband network in the 700 MHz band"*

Response: ADCOM 911 agrees with the definition provided by DHS OIC and would support having this be the definition for narrowband communications as well.

Section IV-A-2: Paragraph 18 – *"The nationwide interoperable broadband network will comprise a set of interoperable, regional or tribal all-IP LTE networks operating in the public safety broadband spectrum; a nationwide IP backbone network; and additional network and service platforms at the national level."*

Response: ADCOM 911 fully supports the concept of a network-of-networks approach integrating multiple regional LTE networks together. We feel this approach offers the greatest flexibility, redundancy and achieves all the required goals of a nationwide network while maintaining local and regional control and implementation that is crucial to the successful buy-in of local agencies throughout the country.

Section IV-A-2: Paragraph 19 – "*The regional networks need to support and maintain certain common characteristics in order to ensure interoperability among them. There are certain other characteristics that pertain to individual networks and serve only the local needs. The common characteristics are:"*

- *"Support of all-IP LTE technology platform, particularly 3GPP standard, Universal Terrestrial Radio Access (E-UTRA), Release 8 (LTE), and associated Evolved Packet Core (EPC) as adopted in this order."*

Response: ADCOM 911 agrees with the common LTE Release 8 platform, but believes that the nationwide network should allow for 3GPP releases beyond 8, provided they are backward compatible. This will allow for varying needs among operators.

- *"Support of Network Identification schemes, specifically the use of Public Land Mobile Network Identifiers (PLMN IDs), as proposed in this notice."*

Response: ADCOM 911 supports a hybrid PLMN scheme with one nationwide PLMN ID and PLMN IDs for each regional system.

- *"Support of certain LTE interfaces to ensure interoperability."*

Response: ADCOM 911 supports the requirement of the LTE interfaces listed in the Third Report and Order.

- *"Support of baseline applications such as those proposed in this FNPRM."*

Response: ADCOM 911 supports the requirement of the baseline applications listed in section 12, paragraph 55 of this FNPRM.

Section IV-A-2: Paragraph 25-26 – *"We seek comment on whether we should establish guiding principles for public safety broadband network architecture"*

Response: ADCOM 911 believes any guiding principles should be grounded in the 3GPP standards and focus on high-level performance and reliability of the overall network. We feel it is important to realize that the various regions throughout the United States will face unique challenges when it comes to building, maintaining and operating the networks. What works well in the eastern region of the county will not work in the western region. The 3GPP standards define the interoperability and the baseline functions that should be required for all individual networks. The specific architectural elements of each network should be allowed to adjust based on the specific need.

Section IV-A-3: Paragraph 28 – *"We seek comment on whether we should take additional measures to encourage public safety broadband network operators to adopt technologies that employ open standards and if so, what should these be? What are the potential dangers to interoperability associated with the use of devices and equipment that employ proprietary technologies? "*

Response: We strongly advocate for the mandatory adoption of open standards. The only way to ensure the ubiquitous functionality desired is to ensure that all networks, and the elements within each network, are based on open standards. The simplest way to ensure these standards are met is to require that any device that meets the active 3GPP release can function on the network. The potential dangers of allowing proprietary technologies on the network are many including lack of true interoperability and portability, increased maintenance and upgrade costs and uneven application performance across the network. In learning from the past, a deviance from open standards was the cause of a majority of interoperability issues within LMR installations.

Section IV-A-4: Paragraph 30 – *"Would the use of both versions [IPv4 and IPv6] in various components of the nationwide network create obstacles to achieving interoperability, either now or in the future? Should the entire network be based on IPv6 from day one?"*

Response: ADCOM 911 believes it is in the best interest of the network's future to require that all elements of the nation-wide system be required to implement and be based on IPv6 from the beginning. While this may cause additional effort and cost up front, it will greatly decrease the costs and effort required to maintain future systems. From a technical perspective, any conversion from IPv6 to IPv4 can be done at the gateway between the LTE network and any legacy networks that will need to be interfaced with and controlled at the local level.

Section IV-A-5: Paragraph 32-33 – *"We seek comment on this proposed hybrid scheme for the assignment of PLMN ID numbers. What are the benefits and disadvantages of such an approach? Were we not to adopt this approach, would the use of a single nationwide PLMN ID be adequate to support the envisioned network-of-networks architecture?"*

Response: Based on previous answers, ADCOM 911 feels the hybrid approach is the only way to ensure the proposed network achieves its goals at a local, state, regional and national level. While some may argue that you can achieve the local goals for operation while maintaining a single network ID, this argument misses the point that the physical and logical set-up of the network must be tied together. While you can separate the two for specific cases, setting up a single, centralized network ID from the logical perspective will require many of the operational elements to follow a centralized model as well.

Section IV-A-7: Paragraph 37 – *"Therefore, we tentatively conclude that within the context of public safety broadband networks, there would be significant efficiency gains if such functions [Roaming Authentication] were performed by third party clearing house rather than by each network operator."*

Response: While we believe that the core elements of the network should maintain a decentralized model, we do agree that certain key functions of the nationwide network are best suited for a single entity to manage. A single clearing house entity rather than each individual network would best suit the process of authenticating and managing roaming between networks.

Section IV-A-8: Paragraph 38-42 – *Methods of Interconnecting Regional Networks*

Response: ADCOM 911 feels that ultimately, direct connections between the networks (Evolved Packet Cores - EPC) are the ideal method for interconnecting the networks. Depending on the number of EPCs, this may or may not be realistic. If the ultimate goal is to have each state maintain an EPC this will definitely not be practical. However, if the ultimate goal is to have regional EPCs this goal may be reachable through a variety of means. One potential method is to utilize existing fiber-optic conduit owned by state transportation departments to facilitate direct connections. Another method might be to use existing secure federal networks for EPC interconnection.

While the direct connection is ideal, ADCOM 911 believes that all methods will be required in the foreseeable future in order to get the nationwide network operational. ADCOM 911 believes that using third party network operators would be the second best option while the public Internet would be the least desirable method for interconnection. The public Internet is not attractive due to the increased security and reliability issues that the regional networks would have to account for and deal with on a day-to-day basis.

Section IV-A-13: Paragraph 58 – *"We seek comment on how to address the interconnection of existing narrowband public safety networks (both voice and data) in multiple bands…"*

Response: While interconnection with existing LMR system would certainly be an asset, we believe the focus of this network should not be to attempt to "lift" legacy systems to a new platform but rather to be a next step for overall communication. The focus for the LTE nationwide network should be to create a solid platform for 21st century data and voice communications. From a practical perspective, existing LMR communication devices will have to be carried by most first responders for some time to come. Rather than attempting to bridge those older technologies with the LTE network, the focus should be on developing communication devices that operate natively on the network that can replace the traditional devices as they reach their normal useful life. That said, we believe requiring basic interoperability between the two systems in the future does hold value.

Section IV-A-18: Paragraph 71 & 73– *"Additionally, we seek comment on whether the Commission should impose either a population- or geographic-based build-out requirement and whether such a requirement should also include interim benchmarks for the percentage of population or geographic area covered."*

"In order to promote better coverage in rural areas, should the Commission require that the coverage area of the network reach major highways and interstates?"

Response: As an entity that serves population bases ranging from dense industrial to sparsely populated rural areas, ADCOM 911 feels the best way to require coverage is by population. While every reasonable effort should be made to cover as much geographic area as possible, attempting to cover 95% of the geographic area of the United States would not only be cost prohibitive from an initial capital perspective, but disproportionately increase the ongoing operational expenses. Additionally, in many states, Colorado among them, geographic coverage is limited by other factors. These would include National Parks and Forests; State or Tribal protected lands; as well as large tracts of land that are privately held.

Section IV-B-1: Paragraph 90-92 – *"We seek comment on public safety needs and standards for prioritization in the context of public safety intra-system roaming…Who should determine this prioritization scheme? "*

"Similarly a related to QoS, we seek comment on the adoption of a standardized QoS scheme for all regional networks."

Response: We strongly believe that the specific Quality of Service and Priority Access issues should be worked out on a local/regional level. While a general framework of Quality of Service for roaming needs to be adopted to ensure users understand the

performance of the network when roaming the details of QoS and Priority for the individuals users should be developed and maintained by the network operators.

Section IV-B-5: Paragraph 99 – *"We seek comment on whether we should similarly provide a 'Standard Roaming Agreement' for public safety intra-system roaming"*

Response: As with the clearinghouse for roaming authentication we agree that a generic roaming agreement is an element that can be centralized. While the specific technical issues and costs need to be negotiated at a local level the general framework that specifies issues such as performance, level of support and coverage can be generalized.

Section IV-D-1 to 3: Paragraph 106-116 – *Conformance, Interoperability Testing and Verification*

Response: While ADCOM 911 supports and believes in the benefits of Conformance and IOT testing, we feel without established and understood testing processes it is too early to require and mandate such requirements. Any installation should be required to adhere to the standards and interfaces defined, however, formal testing and certification should be developed further. The required tests for such certification are potentially expensive and cumbersome creating a great deal of exposure for initial builders. Additionally, ADCOM 911 believes a system should be put in place where a great deal, if not the entire burden for such certifications should be born by the equipment manufacturers.

ADCOM 911 would recommend that the Public Safety Communications Research Program be allowed to finalize its work on conformance and IOT testing and present a proposed system to all parties involved in the network development. Upon the completion of this process all parties involved can work together to establish the processes and specific certifications required to operate a public safety broadband network.

Section IV-E-6: Paragraph 129 – *"However, we tentatively conclude that we should allow public safety to operate fixed services in this band on an ancillary basis "*

Response: We agree that public safety agencies should be allowed to operate fixed services at their discretion as long as they do not interfere with mobile devices and have the proper QoS and priority levels programmed. We believe fixed devices can play a critical role in both day-to-day operations and acute situations for public safety. A device that operates as ancillary on most days can take on a crucial, primary role in a specific incident. We believe simple, straightforward guidelines outlining interference issues can be adopted in order to accomplish this goal.

Section IV-E-8: Paragraph 133 – *"We seek comment on how best to ensure that the public safety broadband network can interconnect with NG911 networks to support such communication"*

Response: The key for integrating with future NG911 networks is to ensure both networks are built upon fundamental and open IP and networking principles. As long as LTE network ensure open IP based standards, any NG911 related information could be transferred to and from the broadband network. We would also support the eventual utilization of the broadband network to directly transport 9-1-1 calls in specific circumstances.

Section IV-F: Paragraph 134-140 – *Section 337 Eligible Users*

Response: In regards to the issue of Eligible Users under section 337, ADCOM 911 believes the core focus of the LTE broadband network needs to be Public Safety and First Responders. That said, we also see and agree with the argument that other entities and individuals besides Police, Fire and EMS personnel have key roles in public safety and emergency response. We agree that secondary users should be allowed on the network but would strongly argue for very tight limitations on these entities. ADCOM 911 agrees that any secondary users must fit the following criteria:

- Be a public entity or an entity focused on providing public services
- Have a nexus to first responders whether on a day-to-day or acute situation basis
- Have a lower priority than first responders and be subject to immediate disconnection
- Be authorized by the Local network operator

ADCOM 911 is especially adamant that any secondary use must flow from the bottom up and be authorized by the local operator. ADCOM 911 would not support any federal guideline that guaranteed secondary users access to the system without permission from the local operators. As stated throughout these comments, each locality will have different demands and challenges operating and maintain the network and the inclusion of secondary users must be dealt with at the local level.

In regards to fees collected, ADCOM 911 supports the concept that any fees collected from secondary users must be used for the operation, maintenance and upgrade of the network.